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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/996,423	11/28/2001	John Whitman	4294.3US (98-1208.3)	2810
24247	7590	03/19/2004	EXAMINER	
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			PHAM, THANH V	
			ART UNIT	PAPER NUMBER

2823

DATE MAILED: 03/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/996,423

Applicant(s)

WHITMAN ET AL

Examiner

Thanh V Pham

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,7-11 and 14-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,7-11 and 14-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/03/03 and 01/26/04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. It is agreed that the term “gradual” is defined as “advancing or progressing by regular or continuous degrees”; therefore, the regular or continuous 20,000 rpm of Wolf (provided by the applicant) has been suggested as an adequate compromise spin-ramp with respect to various variable parameters **or** Yoshihara’s acceleration (related tables in cols. 9 and 10) of 10,000 rpm or 30,000 rpm wherein a number of rpm is provided as a regular or continuous degrees of acceleration from one speed to another speed **or** Yonaha’s time frame of 2 seconds for changing the speed from 1,000 rpm to 5,670 rpm (calculated by the applicant).

Applicant argues with the statement: “the term ‘gradually’ is a relative term, which is acceptable if one of ordinary skill in the art would readily understand its meaning in light of the specification”; therefore, the examiner tries to look in the specification and finds no indication for this relative term. Paragraphs [012], [0014], [0019] and [0040] after the term “gradually increased” add “or ramped up” as an explanation without giving any further value(s) or number of rotation per unit of time. The most detailed paragraph [0041] discloses a stacked capacitor structure is spun then ‘gradually’ increased to a third speed and the spin rate is then decreased again; at last the remaining solvent is removed by ‘gradually’ increasing the rate of spinning in a known edge bead removal technique; but the specification does not disclose any further regular or continuous value(s) or number of rotation per unit of time or at least a time frame from one speed to another for the claimed “gradually increasing” term.

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At least for the above two reasons, the rejection under 35 USC 112, second paragraph is maintained as stated in the previous Office Action mailed 10/21/03.

2. In response to applicant's argument on the validity of "gradually increasing" of Yoshihara, the examiner considers the rate of increase of the spinning speed disclosed by Yoshihara is encompassed by "gradually increasing" with respected to any faster than disclosed rate of acceleration. Therefore the rejection under 35 USC 102(a) in the previous Office Action is maintained.

3. In response to applicant's argument on the rejection under 103(a) based on Rodrigues, the examiner considers two different reasons for the combination. One is viewed from Rodrigues' method itself and another is in view of a combination of Rodrigues' method with related prior art recognized by Rodrigues. The former is stated: "*At any point, during the photoresist applying step, it would be considered that an amount of photoresist material has been applied and is being spun at a first speed followed by decreasing the speed*". The other is Rodrigues' related prior art, which called "*static dispense*" by Wolf, page 431. The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. Therefore, the rejection under 35 USC 103(a) in the previous Office Action is maintained.

Response to Amendment

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1, 7 and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "gradually" in claims 1, 7 and 14 is a relative term which renders the claim indefinite. The term "gradually" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It is not clear at what rate the increasing is recited.

6. Claims 1-4 are rejected under 35 U.S.C. 102(a) as being anticipated by Yoshihara U.S. Patent No. 6,117,486.

The Yoshihara reference discloses a coating method comprising: applying a material to a substrate; spinning said substrate and said material at the first speed; decelerating to the second speed; then accelerating to a third speed. *In view of the subjectivity associated with "gradually" discussed in the above, the rate of increase of the spinning speed disclosed by Yoshihara is encompassed by "gradually increasing".*

7. Claims 1-4, 7-11, 14-16 and 20-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rodrigues U.S. Patent No. 5,405,813 and the following reason.

The Rodrigues reference discloses a spin coating method comprising: applying a material to a substrate; spinning said substrate and said material at the first speed (abstract);

decelerating to the second speed; then accelerating to a third speed. The substrate is accelerated to a fourth speed to further set the material.

Rodrigues teaches all steps of the instant invention but lacks a clear teaching on photoresist application, filling recesses at first speed and letting the material set at second speed.

At any point, during the photoresist applying step, it would be considered that an amount of photoresist material has been applied and is being spun at a first speed followed by decreasing the speed. Otherwise, the Rodrigues reference's related prior art (the Background and col. 4, lines 6-13) teaches spinning the substrate and the material at a first speed; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply Rodrigues' related prior art into Rodrigues invention itself to have the photoresist on the substrate before said substrate and said material being spun at a first speed because the photoresist application on the substrate step as recognized by Rodrigues would be selected in order to spread the resist material over the substrate in accordance with the teaching of Rodrigues.

It would have been inherently include in the rotation speeds that the material when spread over the surface of a wafer would fill the recesses at a first speed and would set at a second speed; however, if not, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the appropriate speeds for the two rotations to have the material fill the recess and to set into the process of Rodrigues because such rotation speeds would have been selected in accordance within the spin coating art in order to have a desired coating thickness as taught by Rodrigues.

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As admitted (specification's page 13, lines 7-8), the edge bead removal technique is known; therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the fifth speed to remove the solvent from said material because such an extra step would have been applied as one of the method to rinse off the solvent used in the bead removal.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh V Pham whose telephone number is 571-272-1866. The examiner can normally be reached on M-T (6:30-5:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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TvP
03/09/04


George Fourson
Primary Examiner